

Using Volatility Products to Control Risk

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Macro Risk Advisors

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The logo for the 25th Annual Risk Management Conference is contained within a rectangular box with a light beige background and a subtle vertical-line texture. The text "25th Annual" is at the top in a small, dark serif font. Below it, "RISK MANAGEMENT" is written in a larger, bold, dark serif font. At the bottom, "CONFERENCE" is written in a smaller, dark, spaced-out sans-serif font.

25th Annual
RISK MANAGEMENT
CONFERENCE

The VIX

- One month implied volatility metric based on SPX options of many strikes
- Captures the volatility “surface”
- The VIX is driven by
 - Single Stock implied volatility levels - “Micro”
 - Implied Correlation – “Macro”

The S&P 500 Volatility Index: VIX

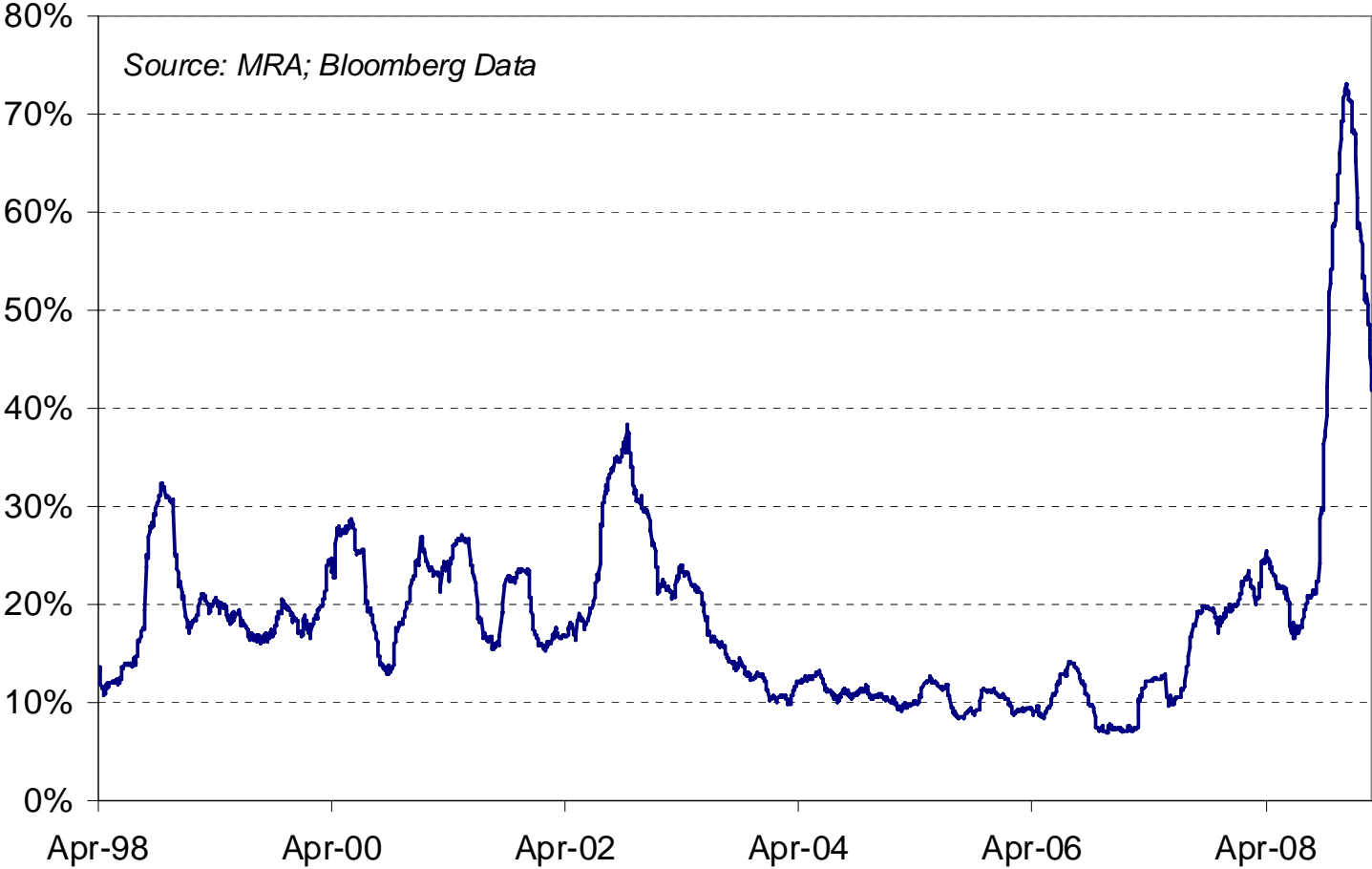
VIX Index



Source: Bloomberg, MRA

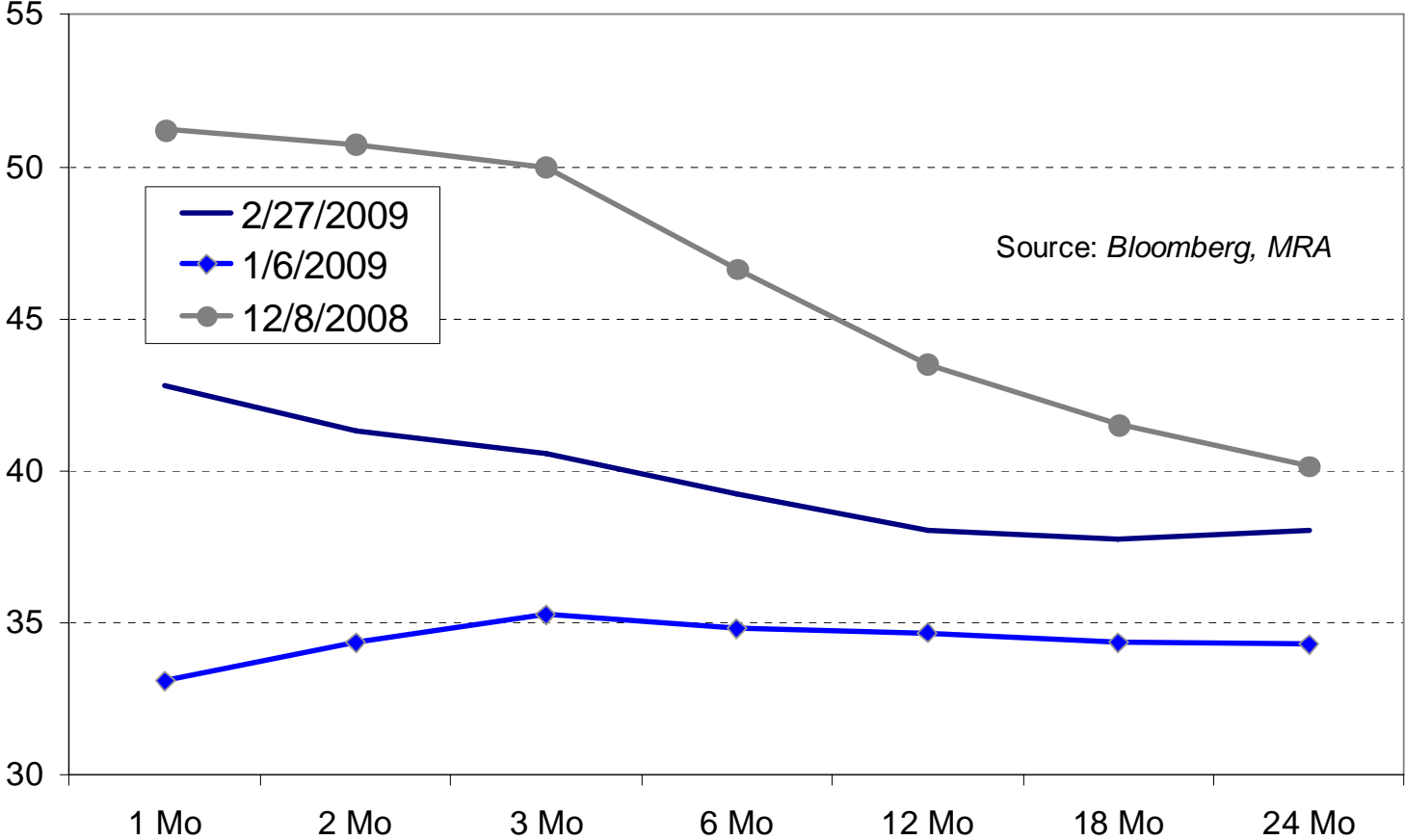
SPX Realized Volatility

Rolling 3 Month SPX Realized Volatility

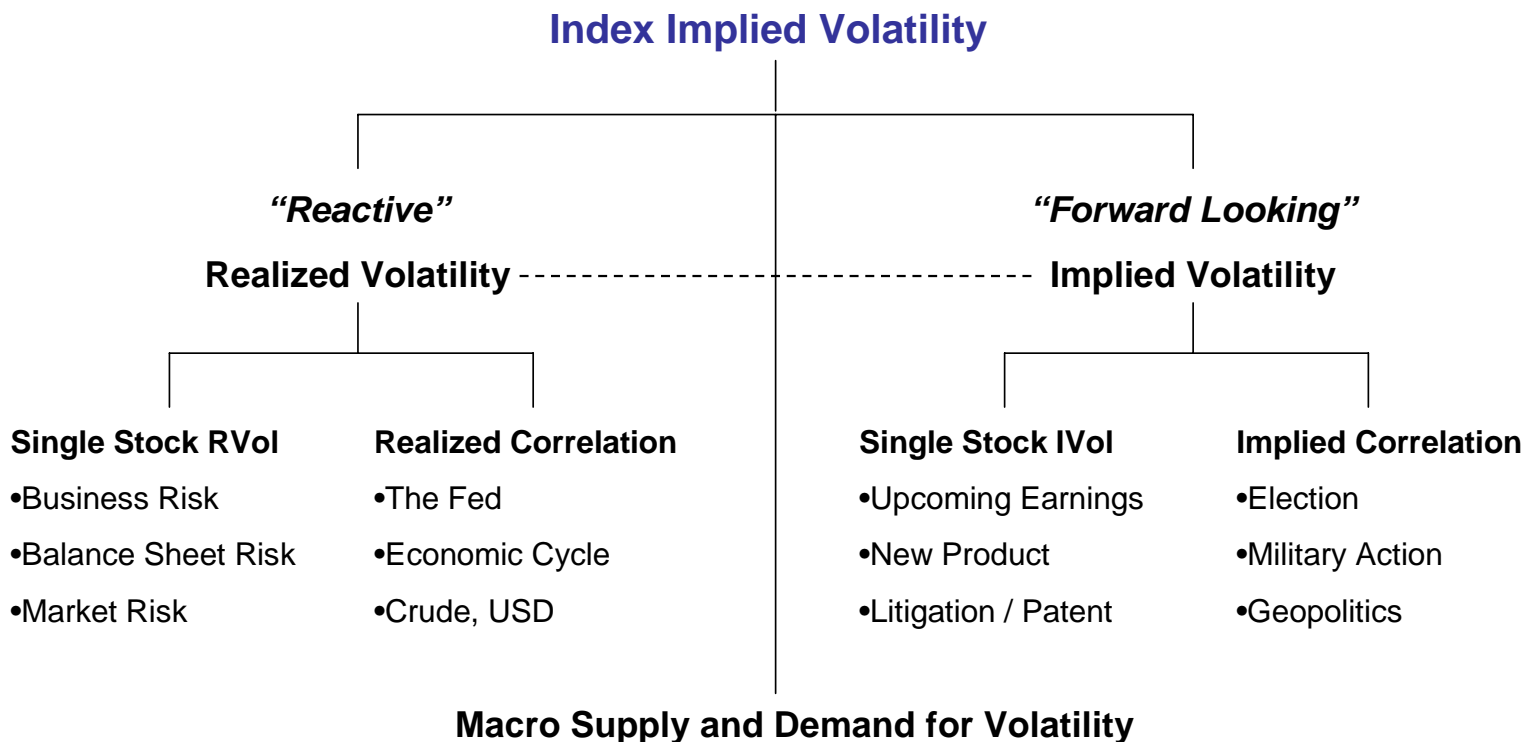


SPX Implied Volatility Termstructure

SPX Implied Volatility Termstructure



What Causes Equity Volatility



Source: MRA

Measures of Volatility Move Together

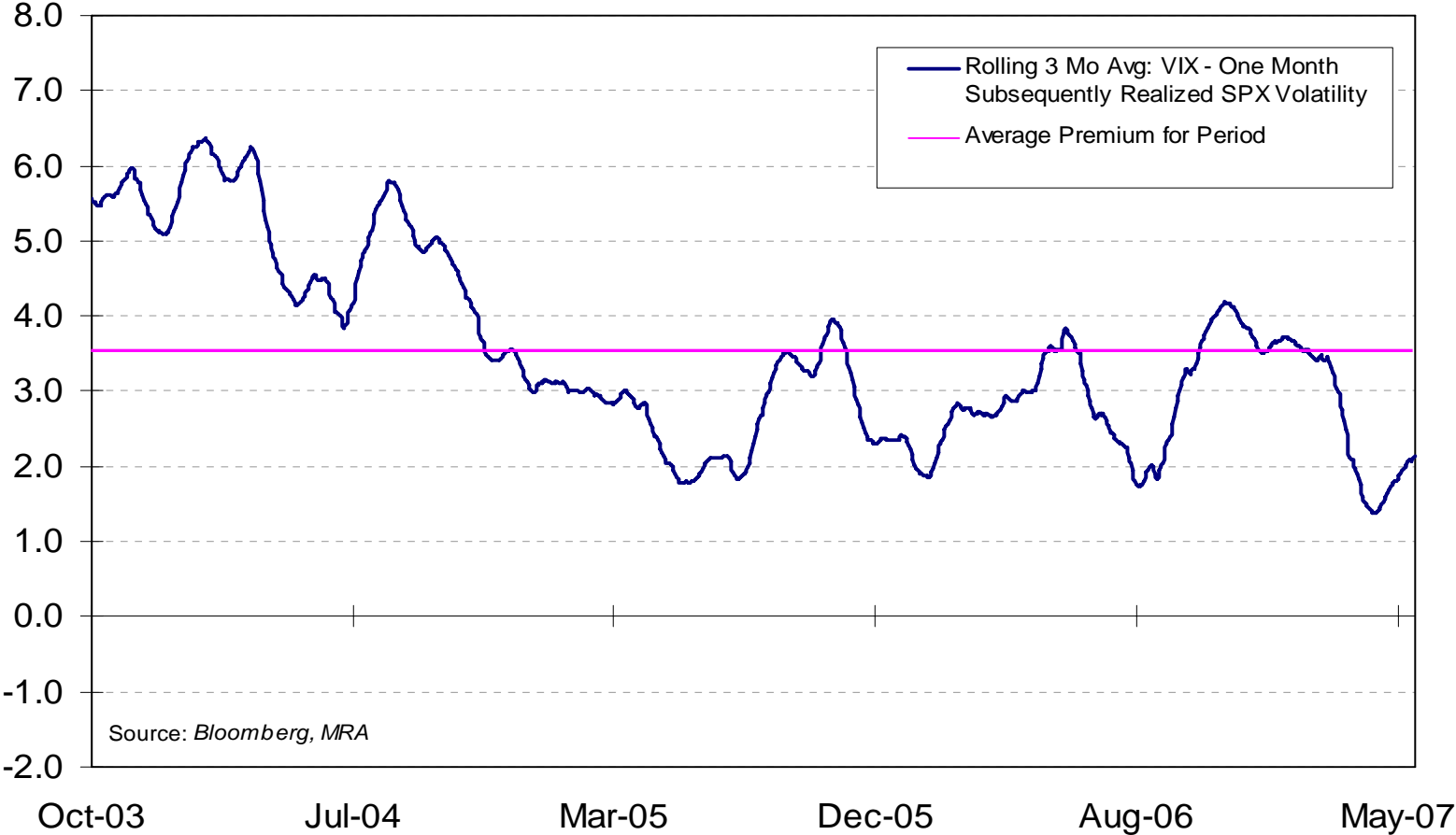
- The following correlation matrix capture the co-variation in popular measures of risk and liquidity.
- The VIX is highly correlated to measures of risk and negatively correlated to measures that capture liquidity.

	VIX	IBOX	MOVE	SPX	JPY/AUD	B/E INF	TBILL	FTSE VOL	SX5E VOL	CALL/PUT
VIX	100.0%	63.1%	27.3%	-84.9%	68.3%	-26.8%	-44.9%	46.8%	55.1%	-6.0%
IBOX		100.0%	34.6%	-70.2%	54.1%	-24.1%	-50.3%	38.5%	46.1%	-2.3%
MOVE			100.0%	-25.8%	33.5%	-13.0%	-21.9%	23.8%	29.5%	-7.6%
SPX				100.0%	-69.6%	20.6%	52.6%	-29.2%	-36.3%	5.8%
JPY/AUD					100.0%	-26.2%	-42.2%	31.1%	45.5%	-0.7%
B/E INF						100.0%	18.6%	-14.7%	-30.8%	-4.0%
TBILL							100.0%	-25.5%	-22.9%	9.1%
FTSE VOL								100.0%	78.1%	-6.9%
SX5E VOL									100.0%	-7.2%
CALL/PUT										100.0%

Source: Bloomberg Data, MRA

VIX Risk Premium

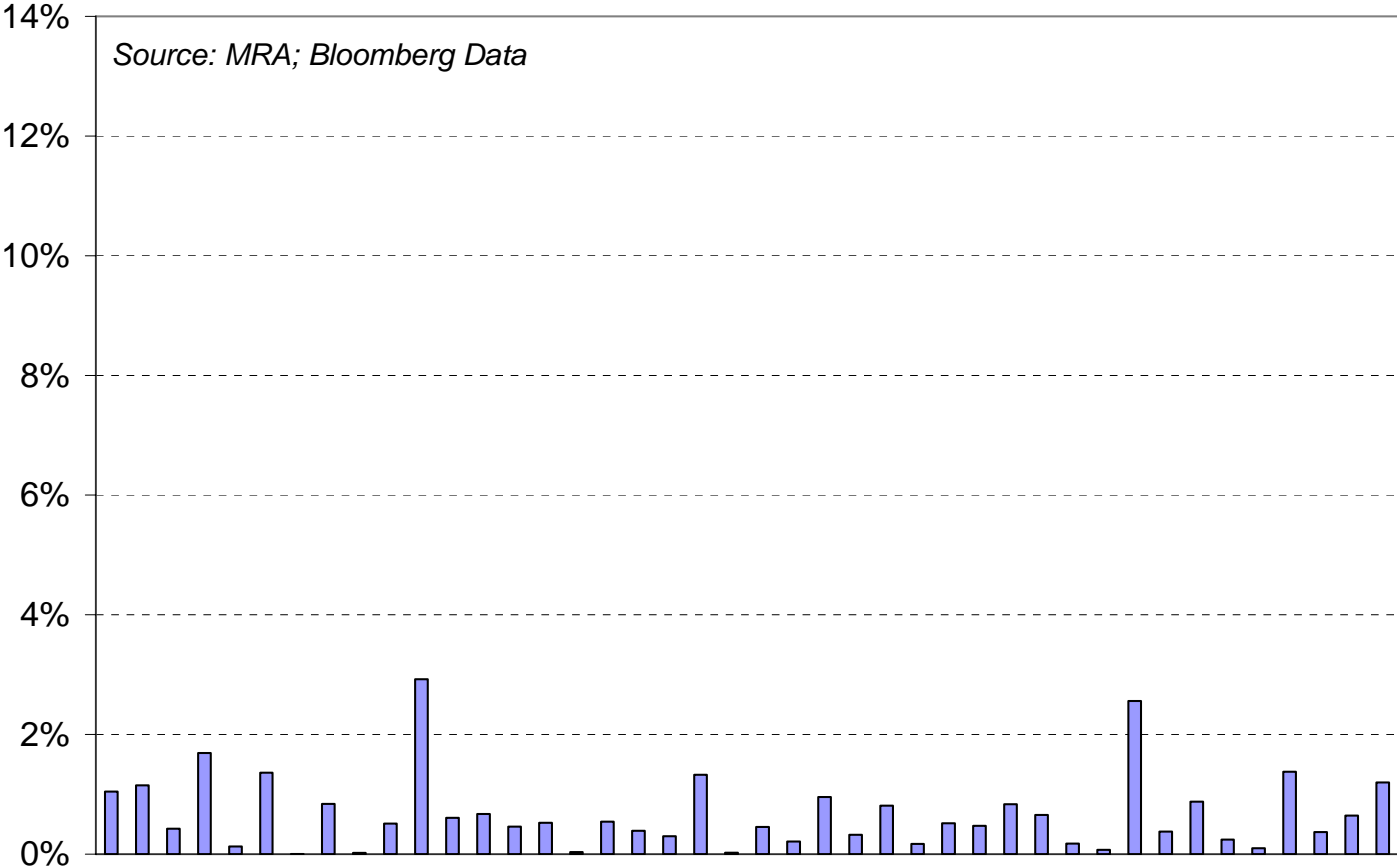
VIX Risk Premium (3 Month Average)



Source: Bloomberg, MRA

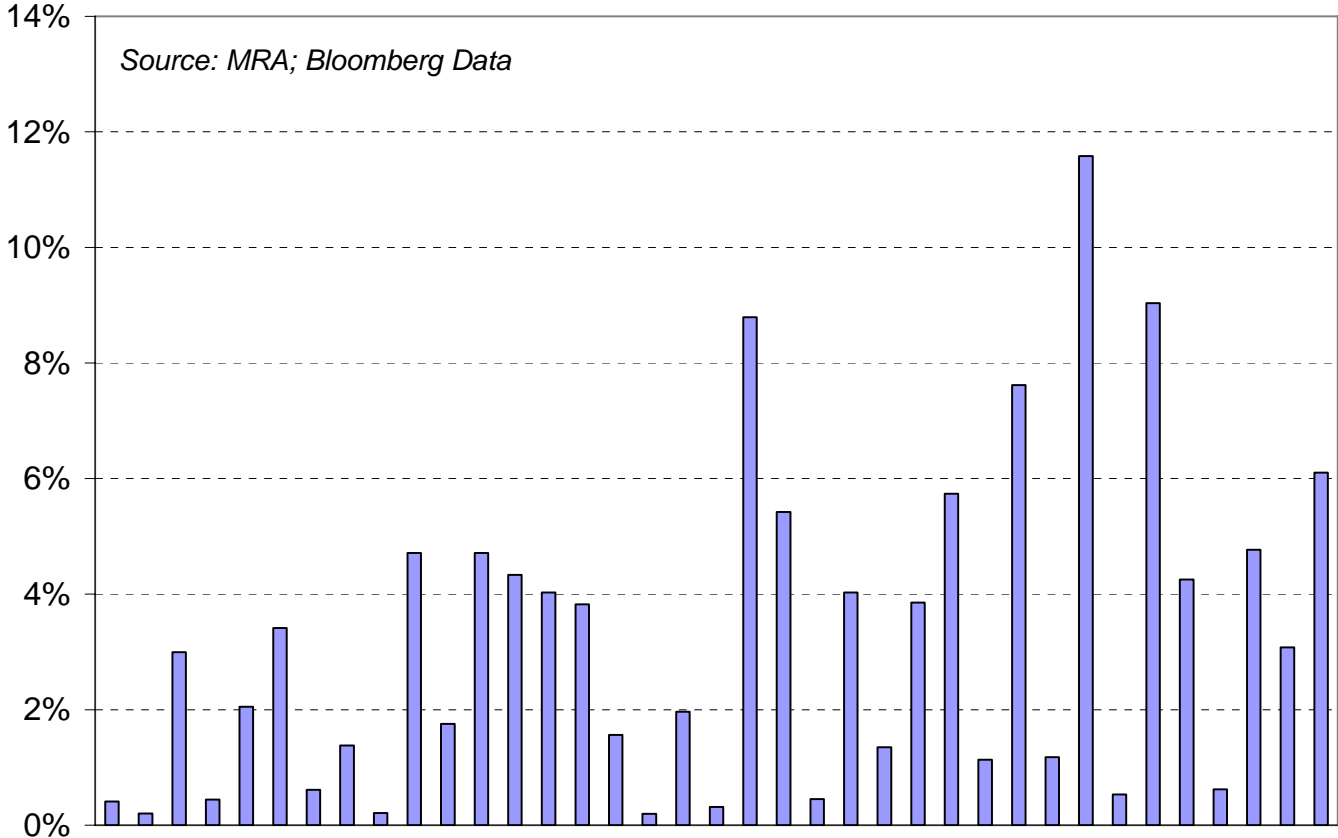
Daily Changes in the S&P 500

Absolute Value of Daily SPX % Change: Sep-Oct 2007



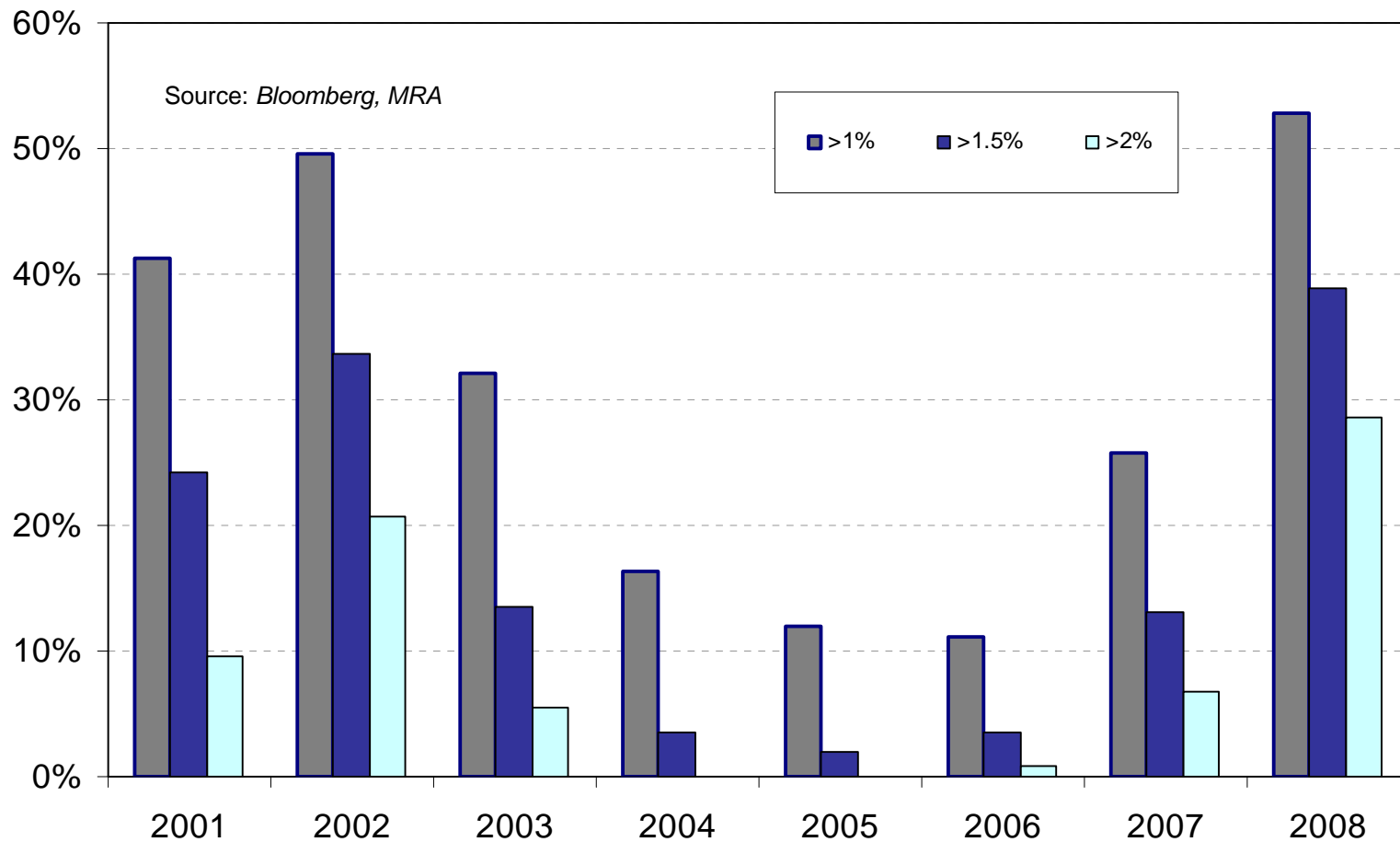
Daily Changes II

Absolute Value of Daily SPX % Change: Sep-Oct 2008



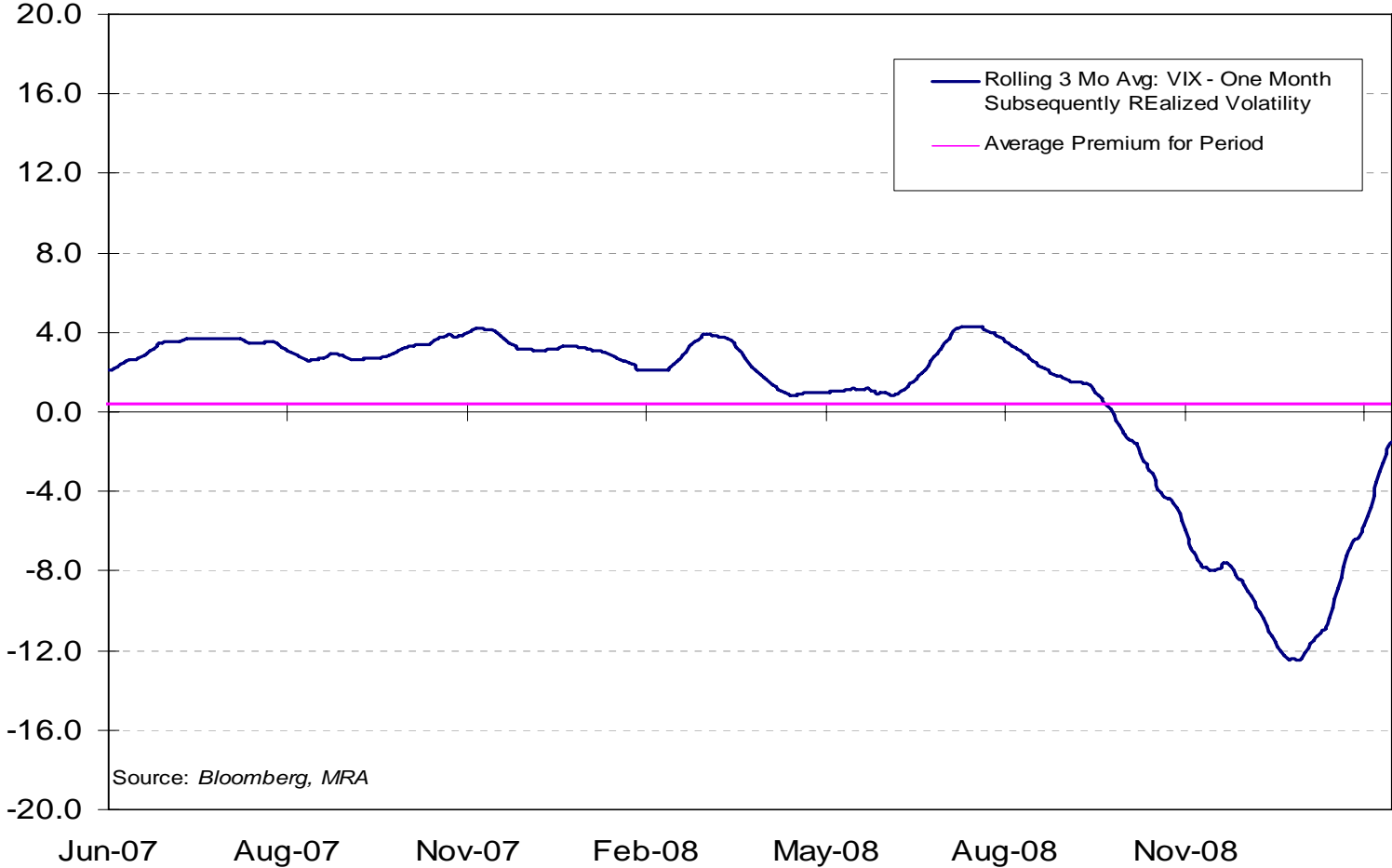
% Moves in the S&P

SPX Percentage of One-Day % Changes



VIX Risk Premium

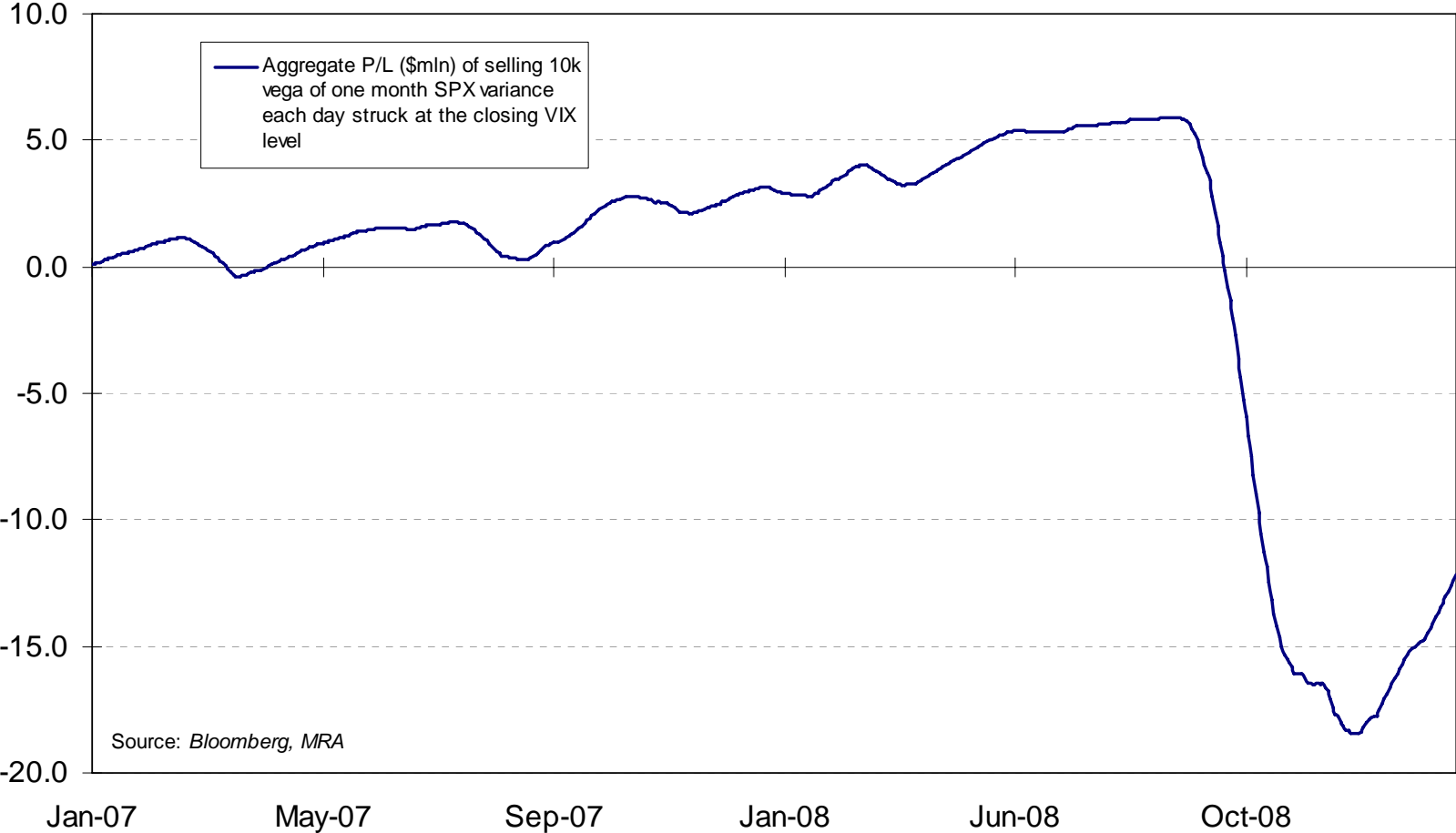
VIX Risk Premium (3 Month Average)



Source: Bloomberg, MRA

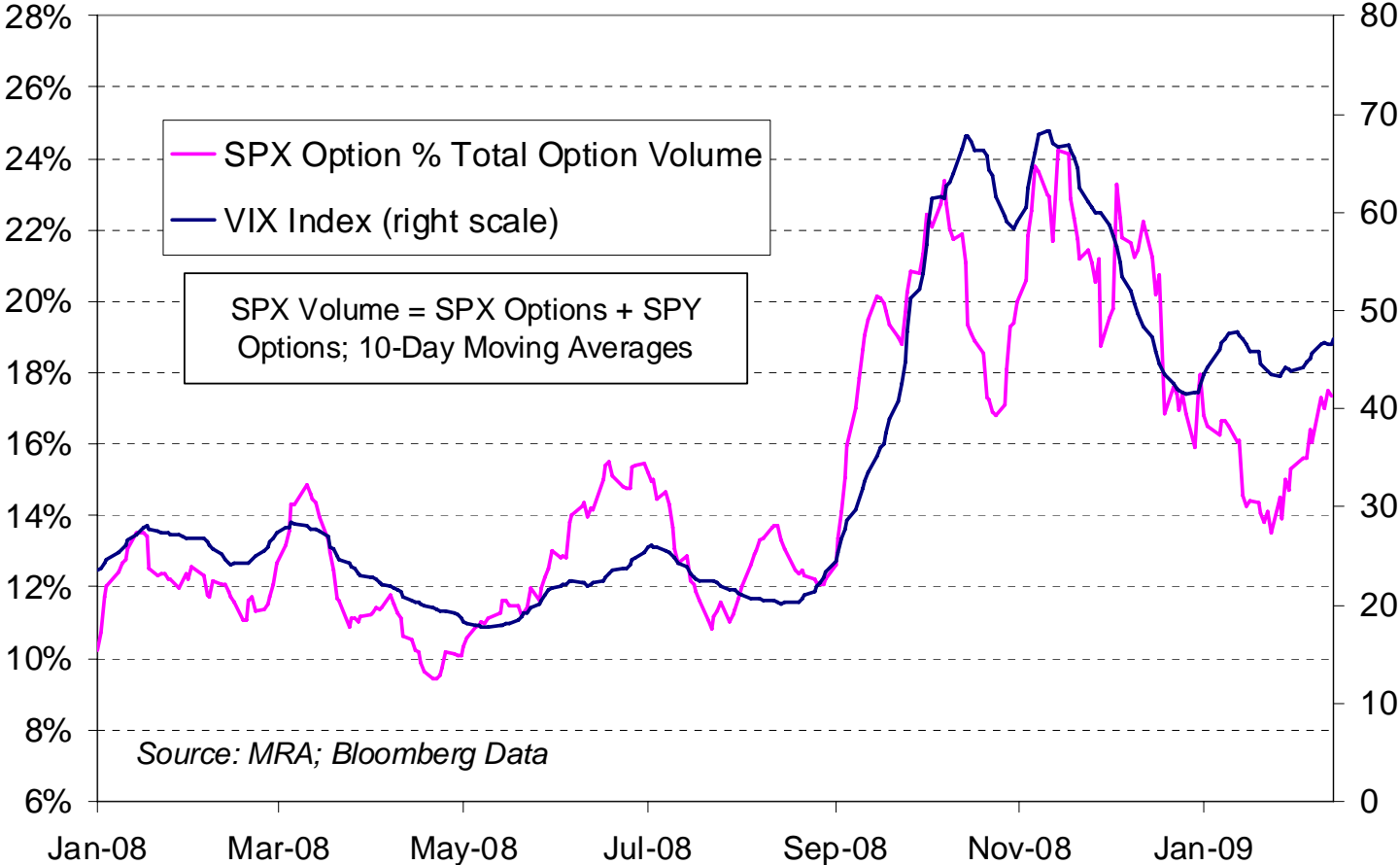
Selling Volatility...Once Profitable

Aggregate P/L of Selling One Month SPX Variance



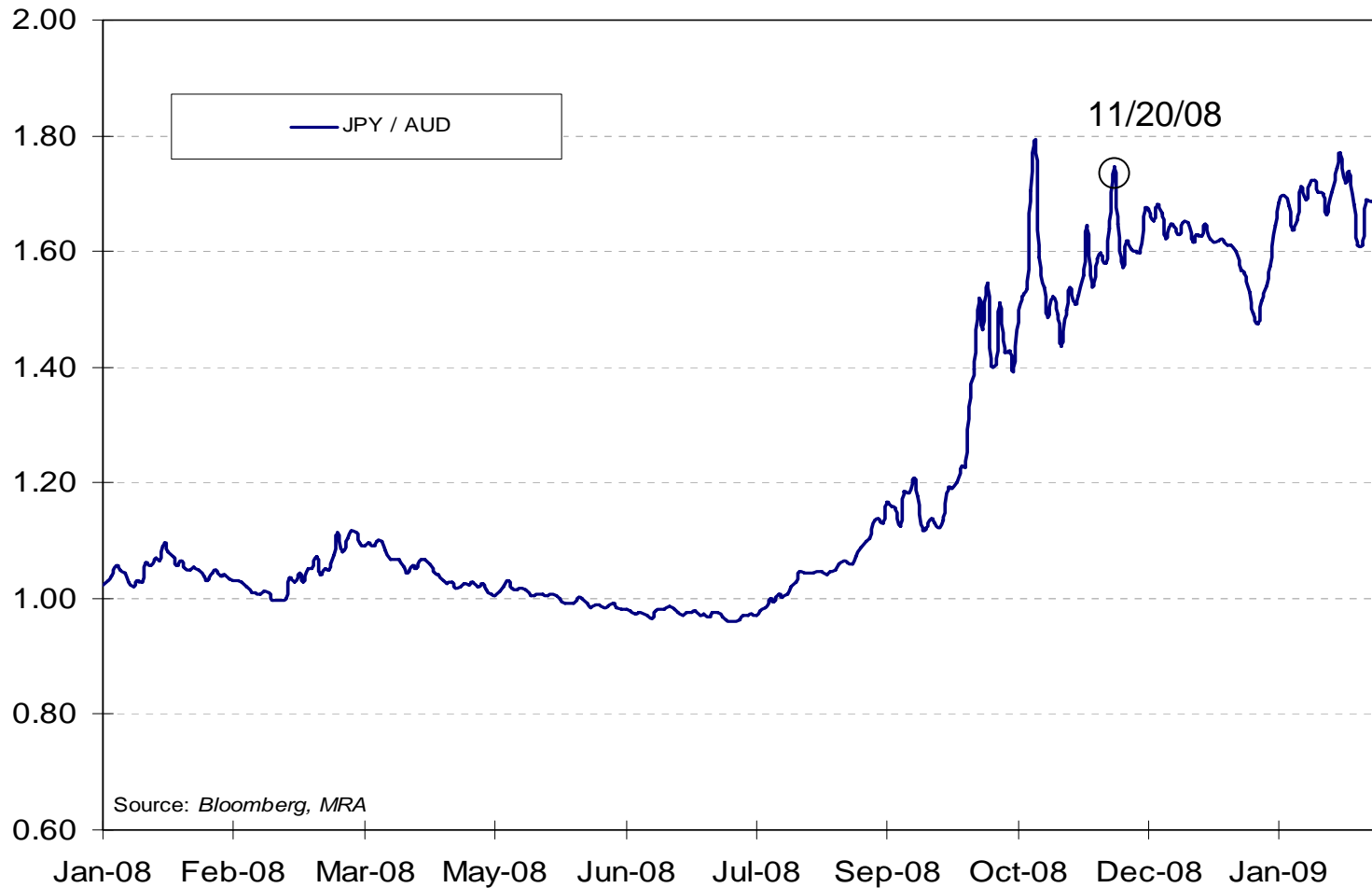
Index Option Volume and the VIX Moves Together

Option Trading Goes Macro



JPY / AUD

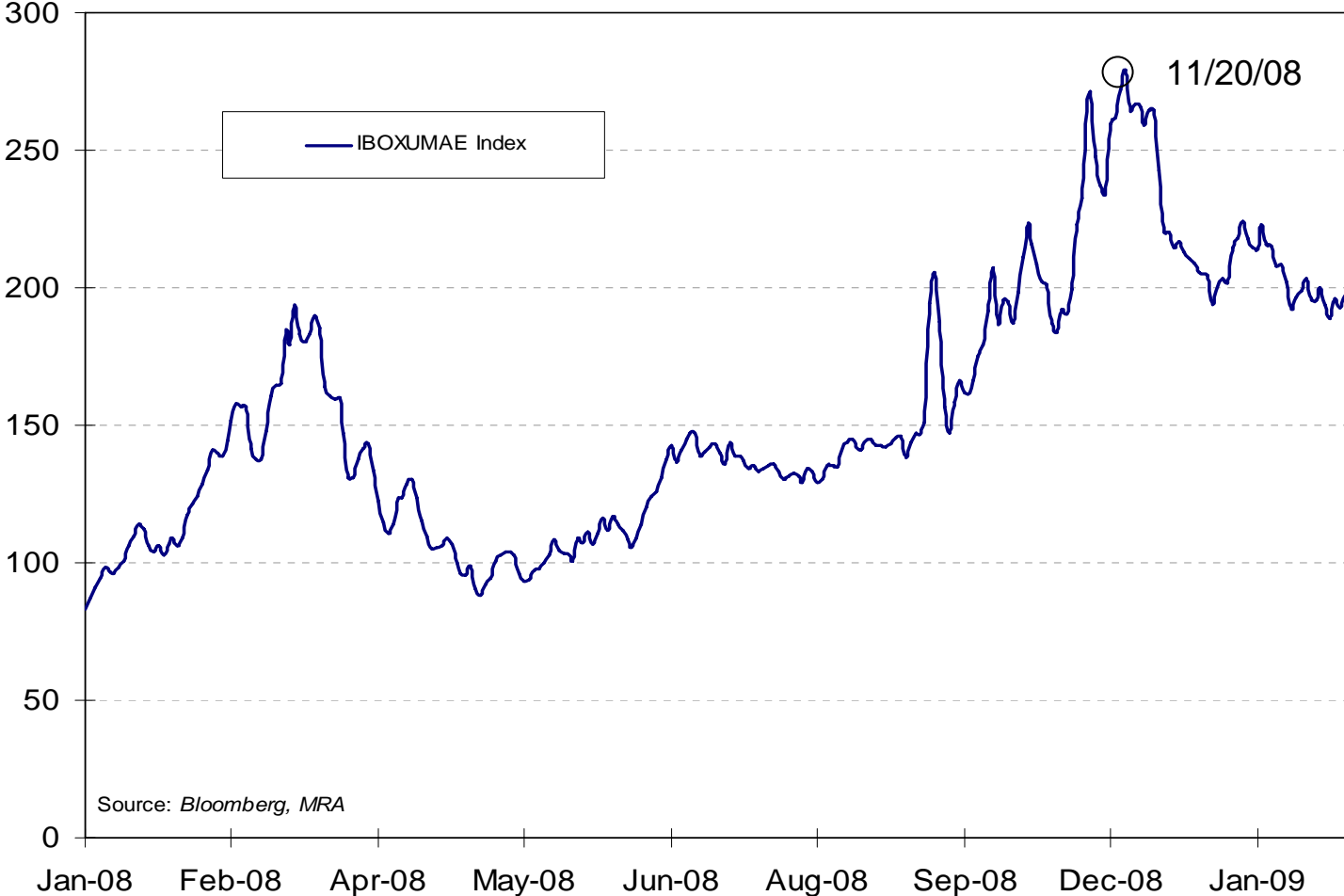
Carry Trade Unwind



Source: Bloomberg, MRA

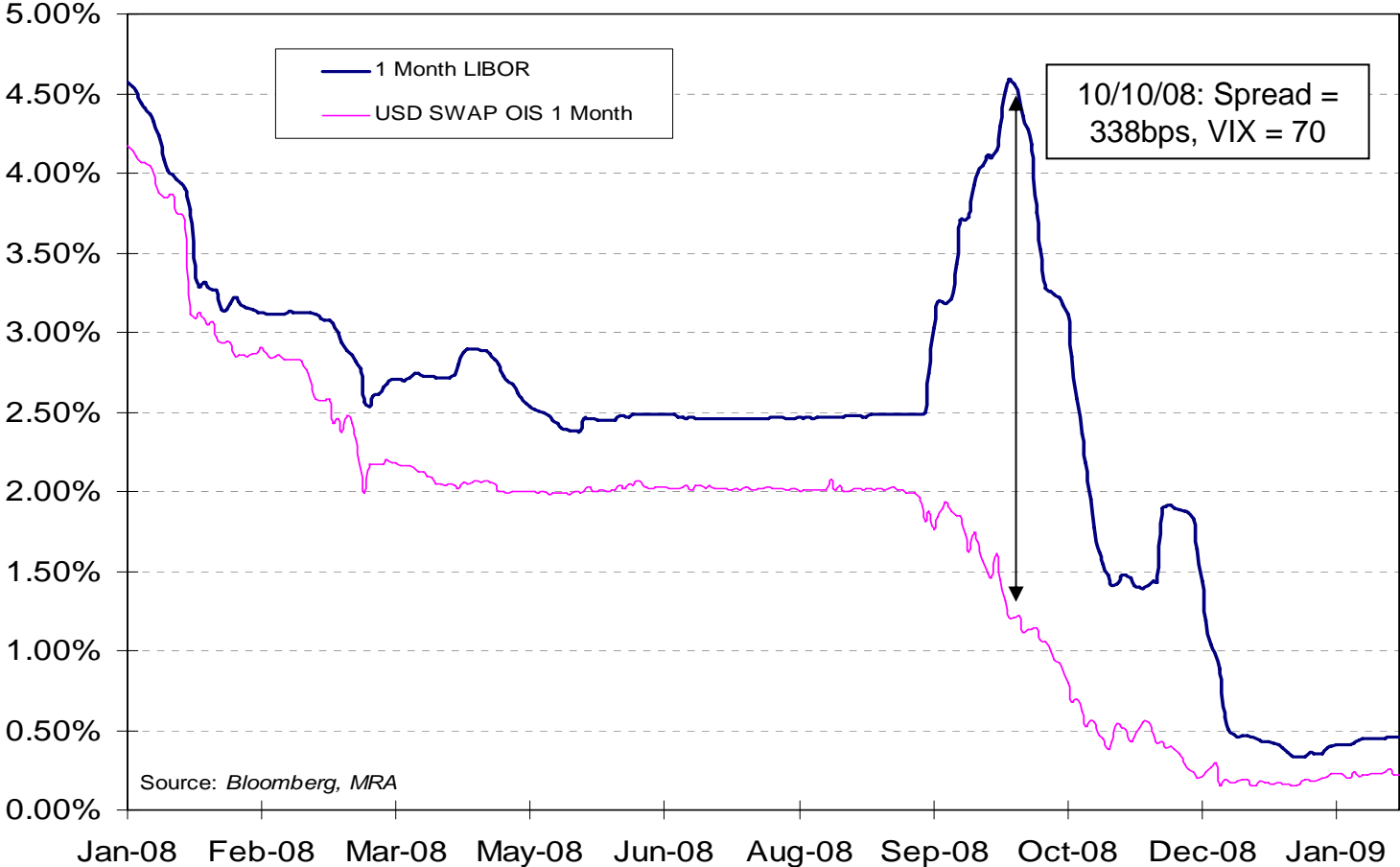
CDX IG 5 Year

CDX IG 5 Year



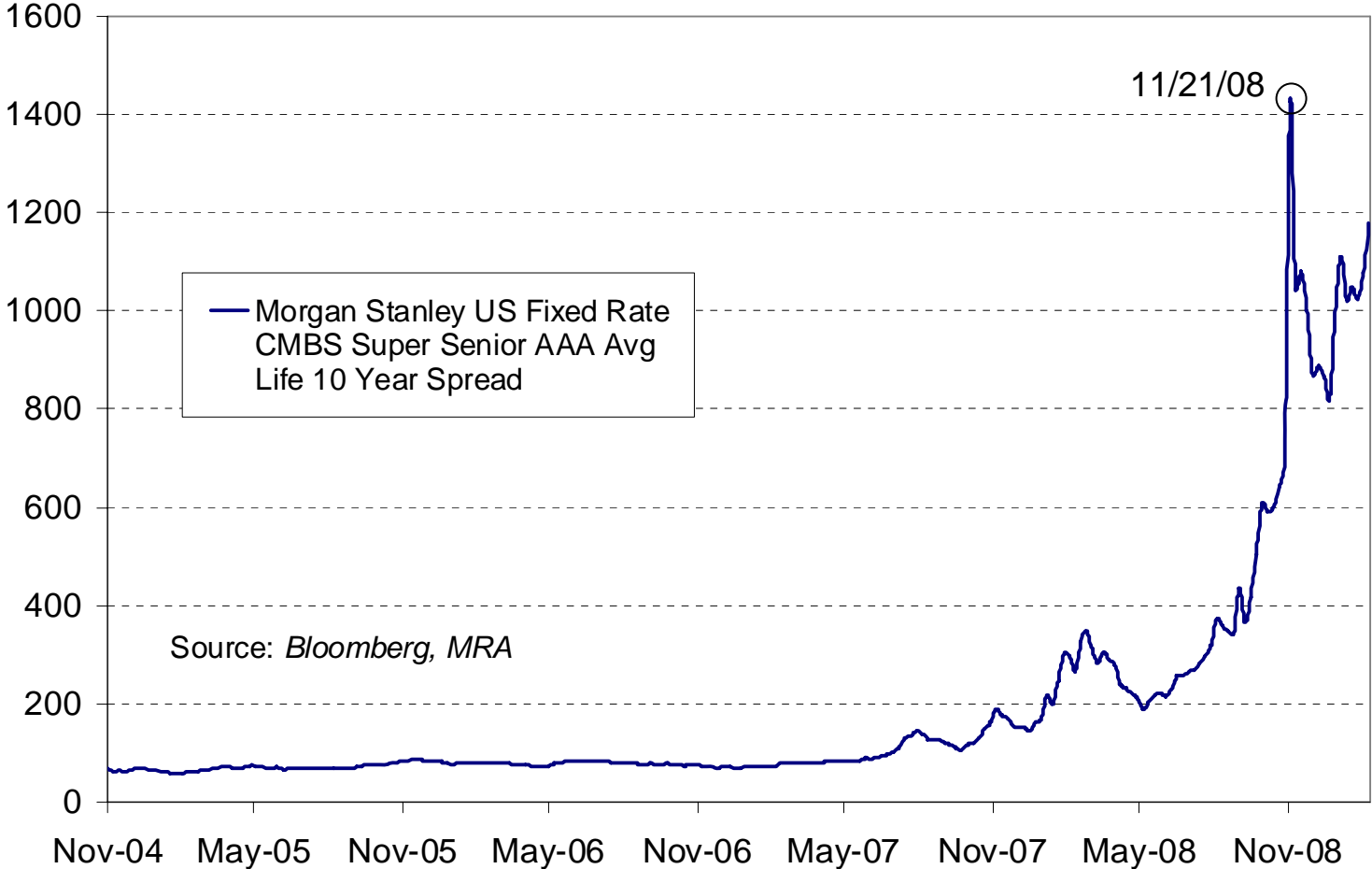
1 Month LIBOR / OIS Spread (bps)

1 Month LIBOR vs. OIS



CMBS Spread

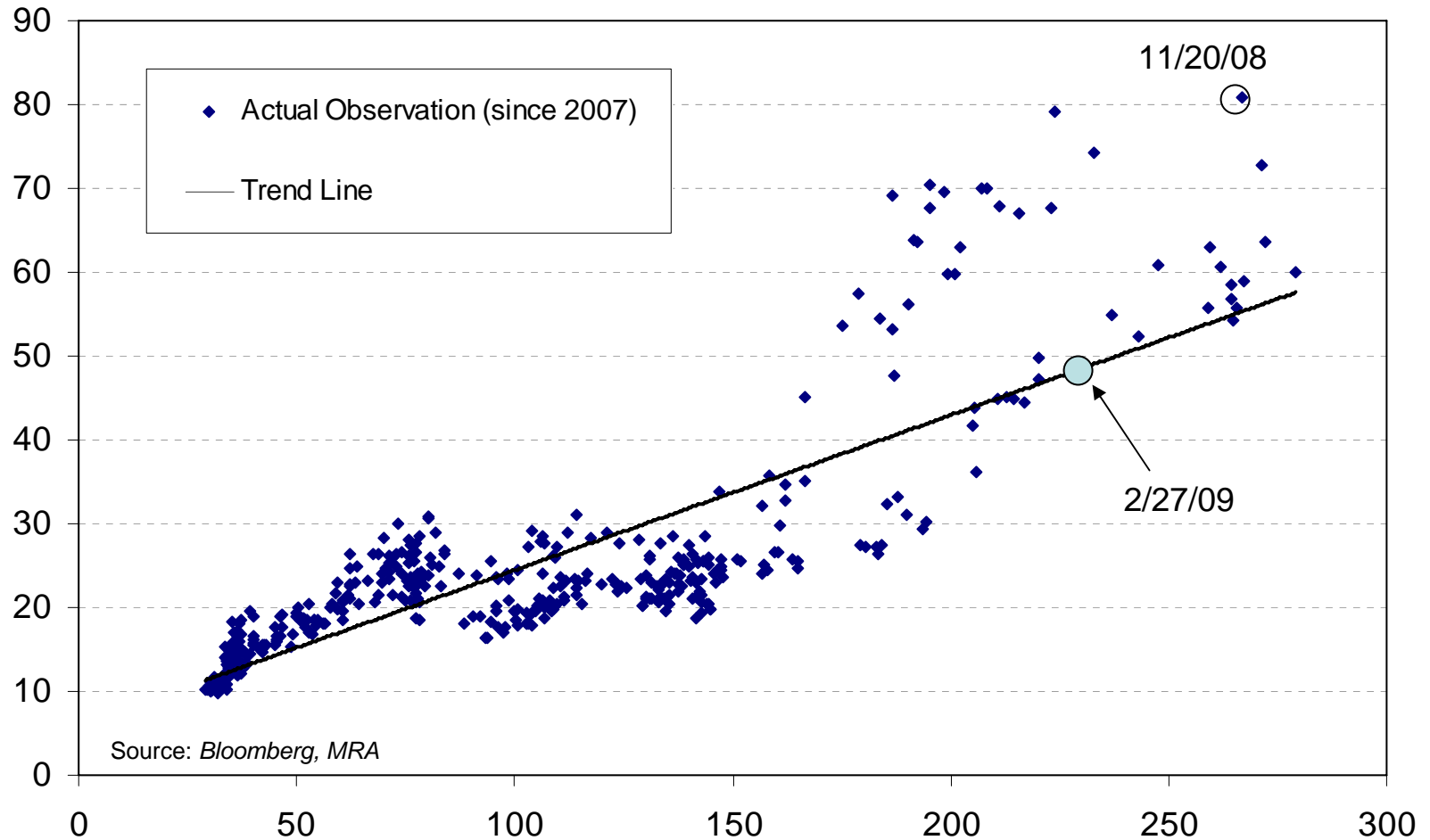
Super Senior CMBS Spreads



Source: *Bloomberg, MRA*

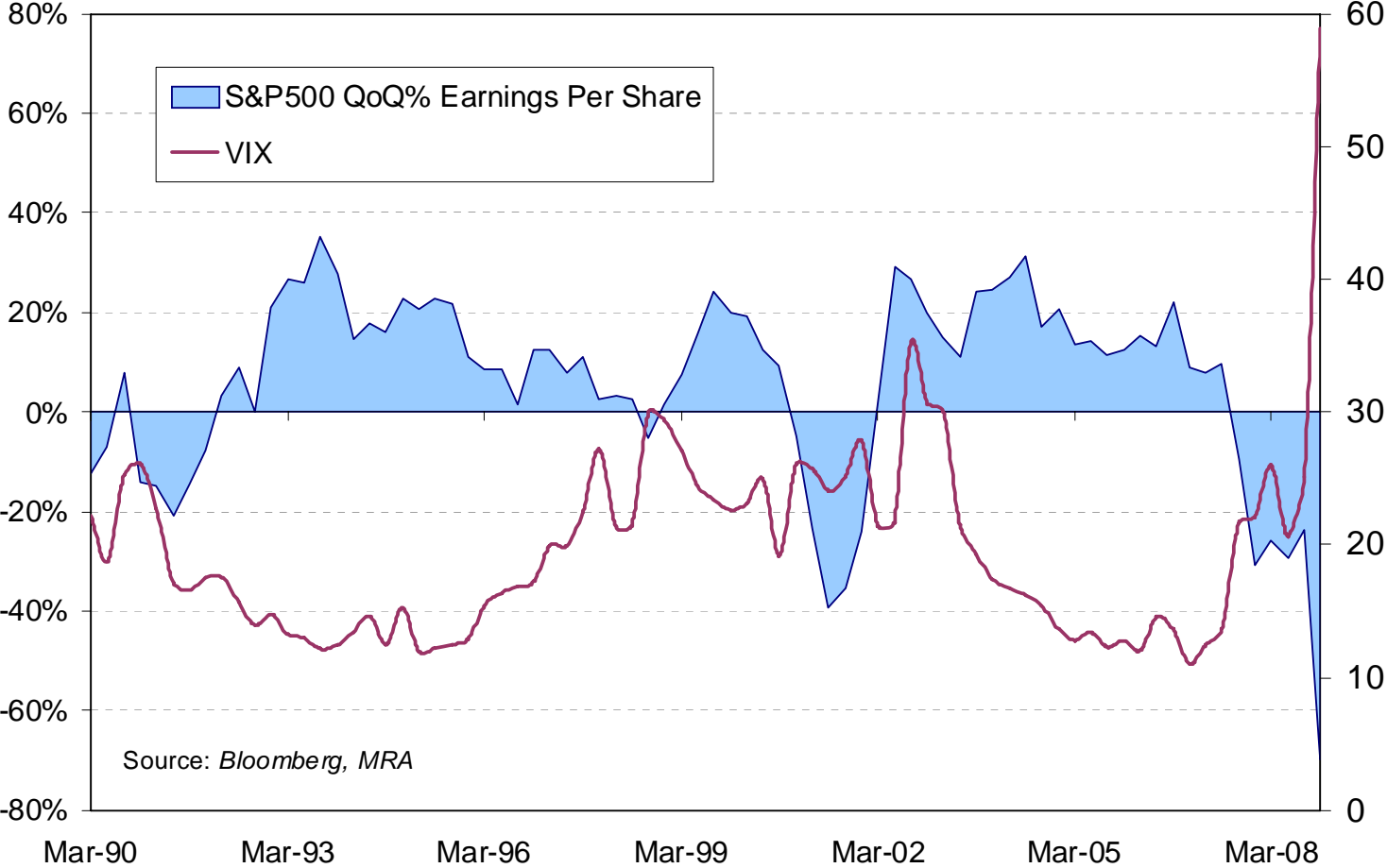
The VIX & Credit Default Swap Spreads

Scatter Plot: VIX vs. Generic 5 year IG



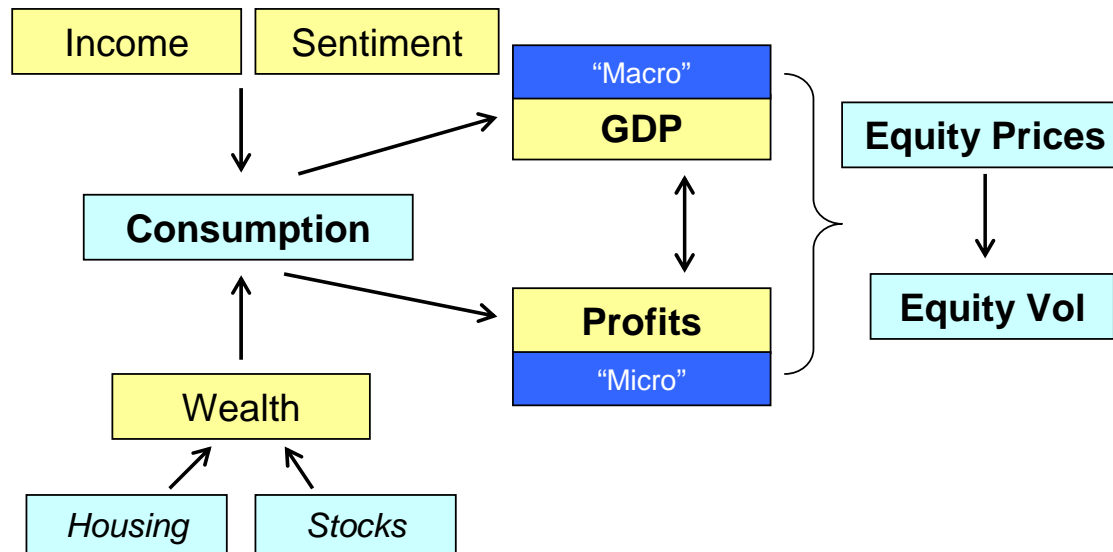
VIX & S&P Earnings

S&P 500 Quarterly EPS vs. VIX



Source: Bloomberg, MRA

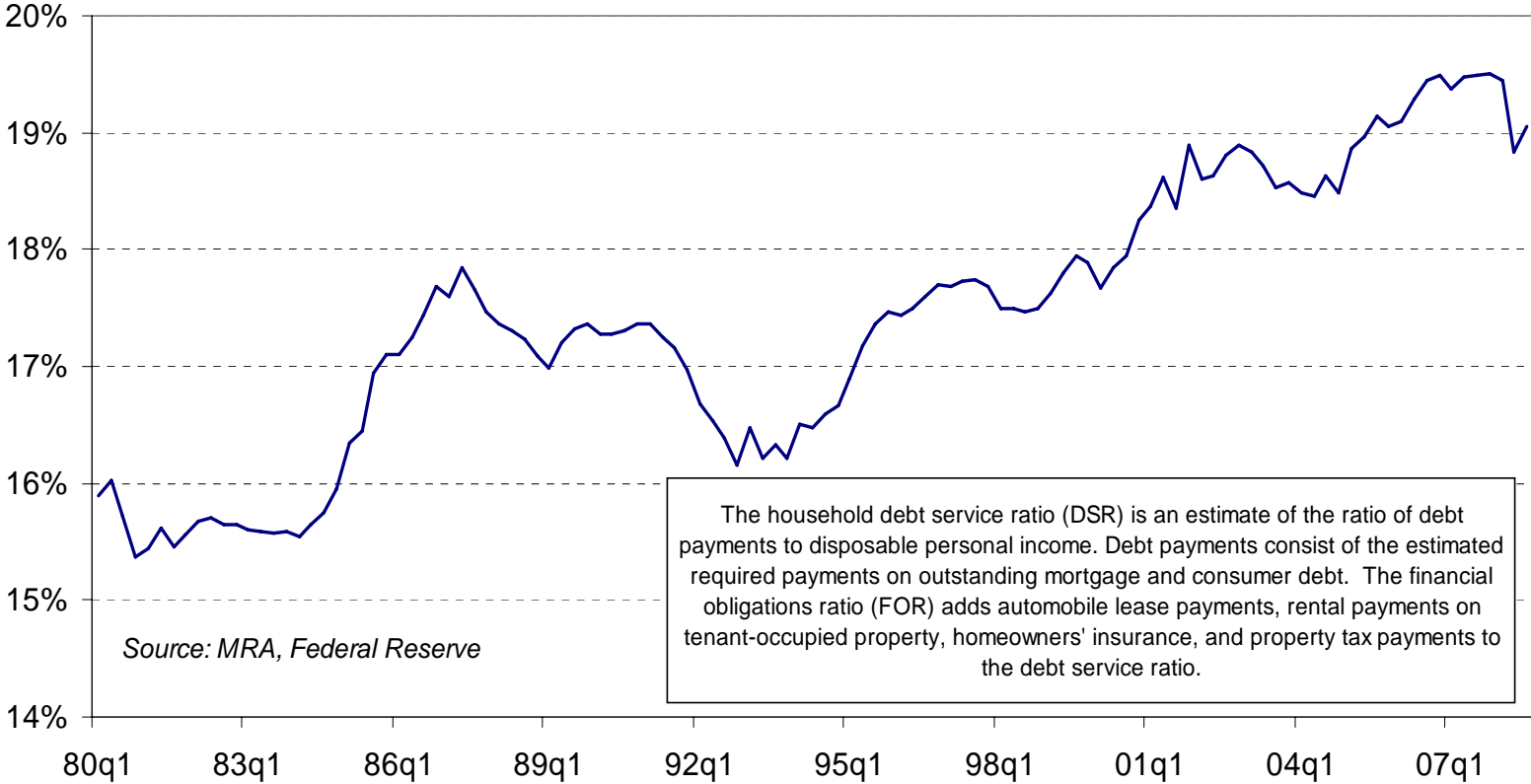
The Consumer and the Economy



Source: MRA, Bloomberg Data

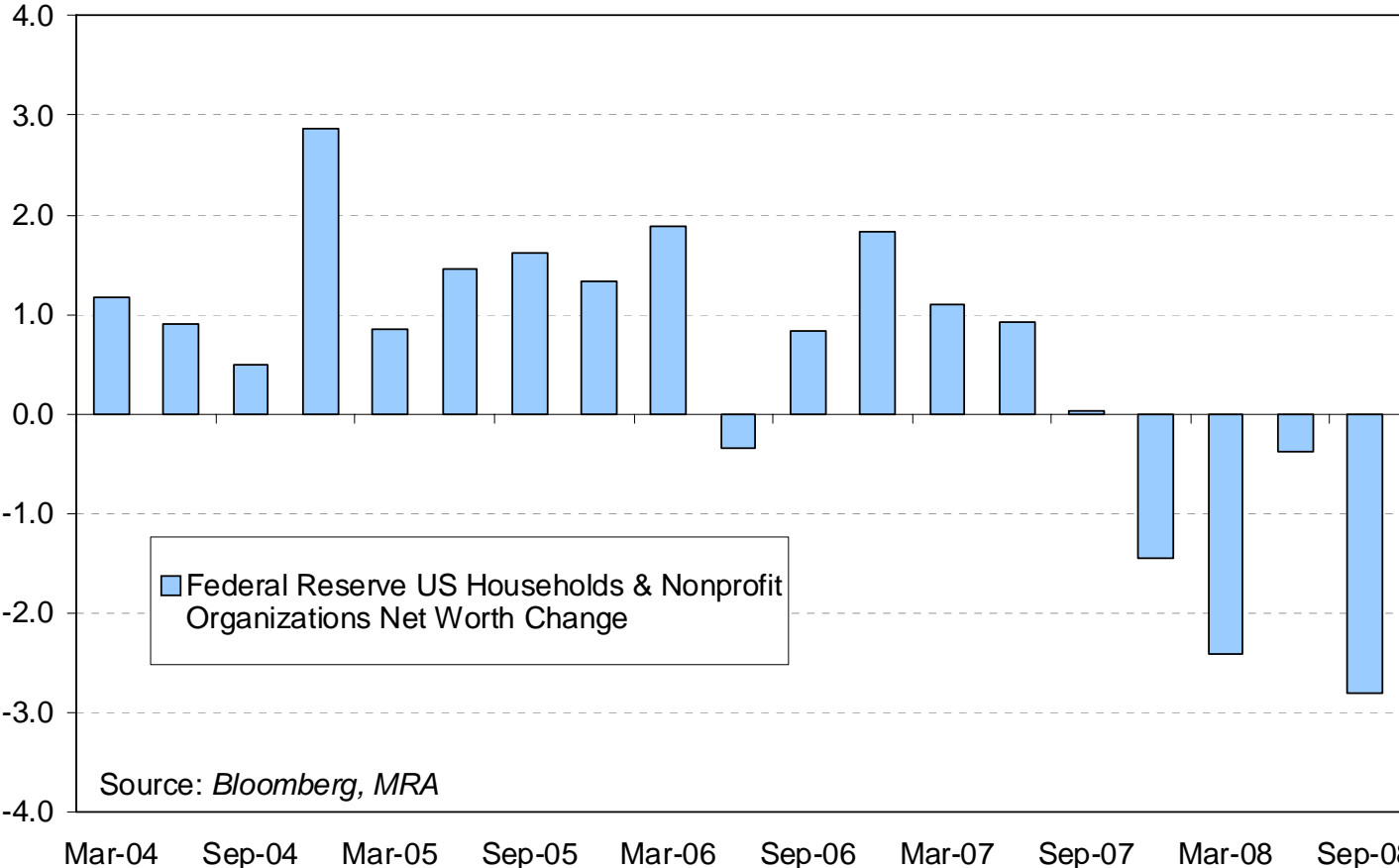
Consumer Obligation Ratio

Consumer Financial Obligation Ratio



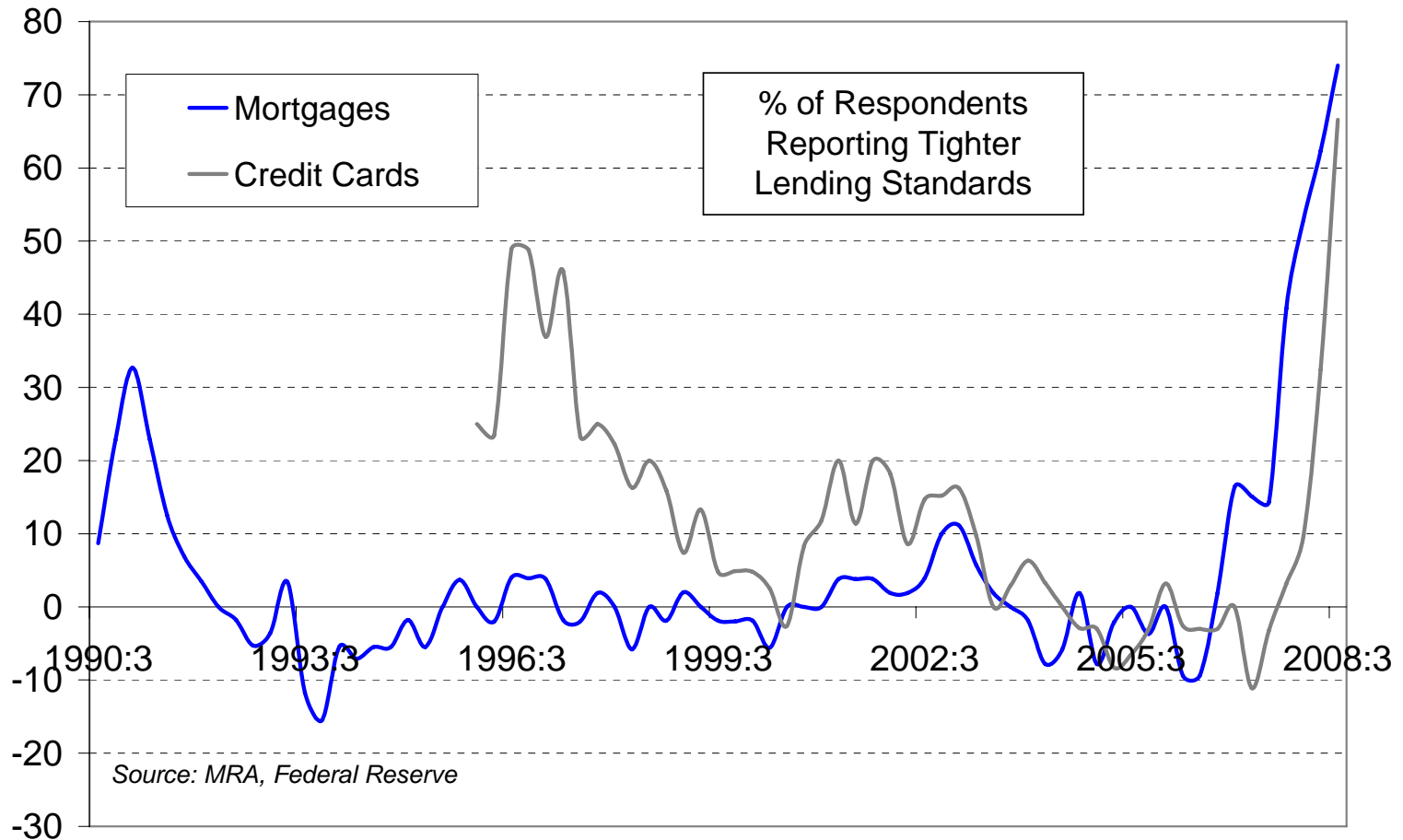
Household Balance Sheets Under Stress

Change in US Households Net Worth (Trillions)



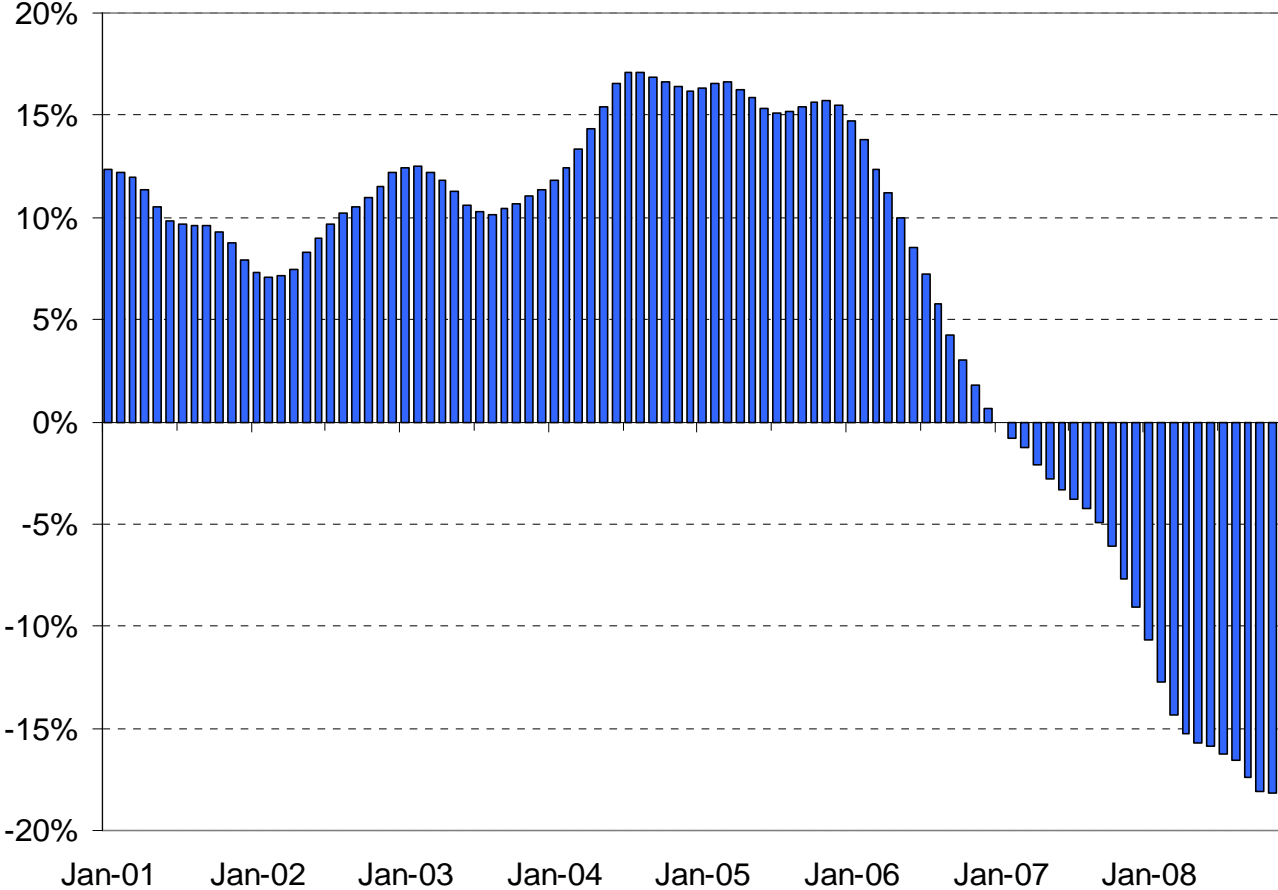
Tighter Lending Standards...

Fed Senior Loan Officer Survey



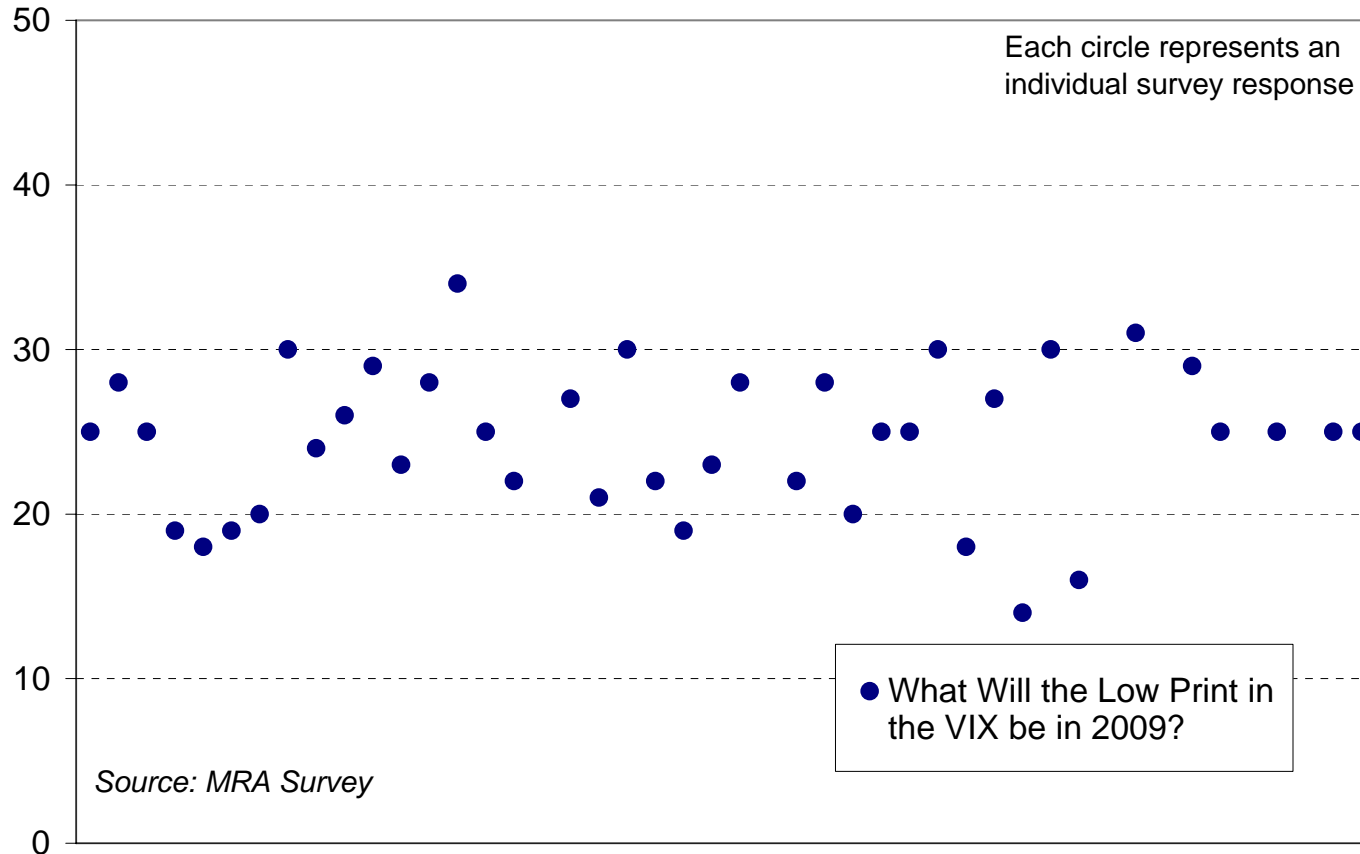
The Real Estate Downturn

Case Shiller Composite Index year over Year % Change



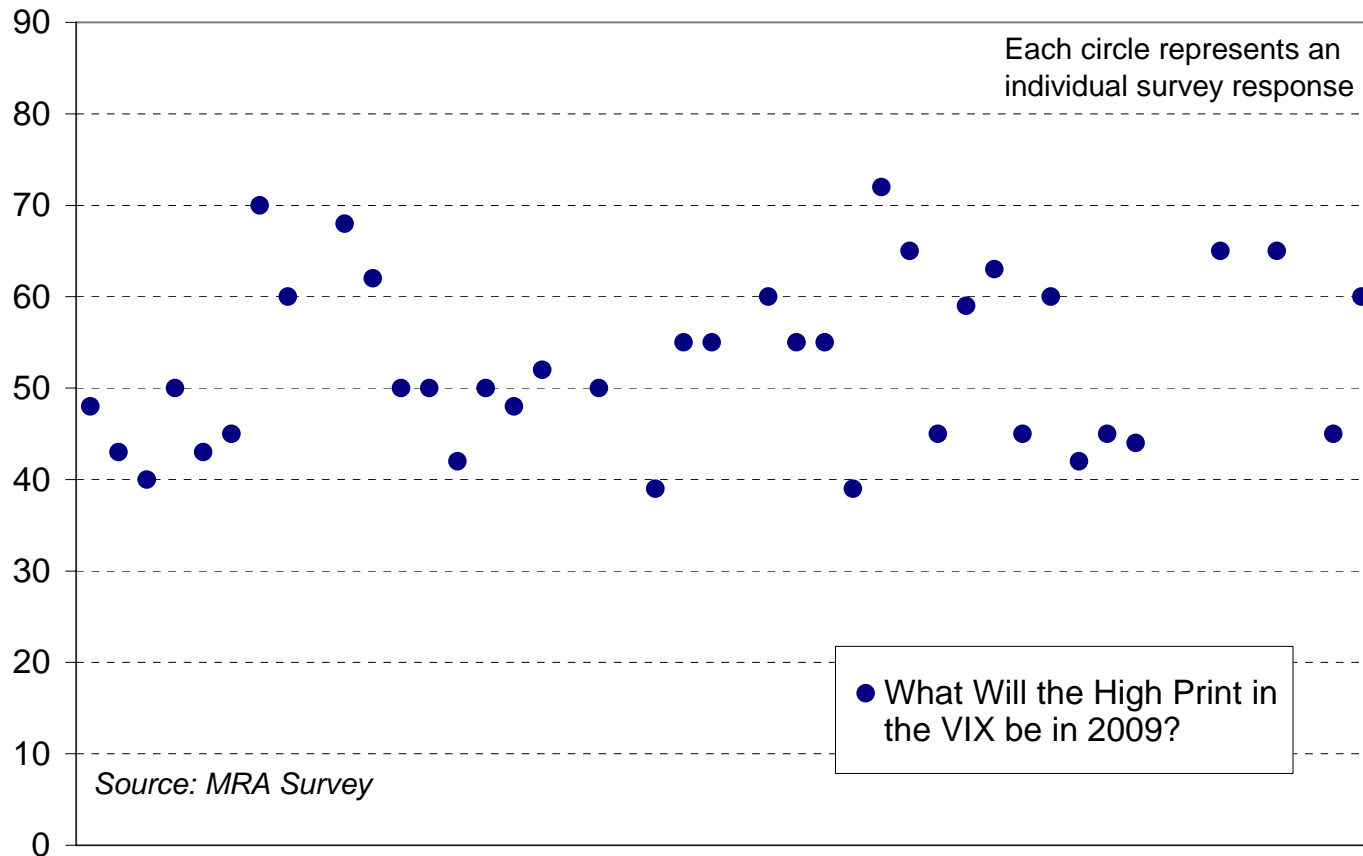
A New Meaning of Low for the VIX...

2009 Low Print in VIX



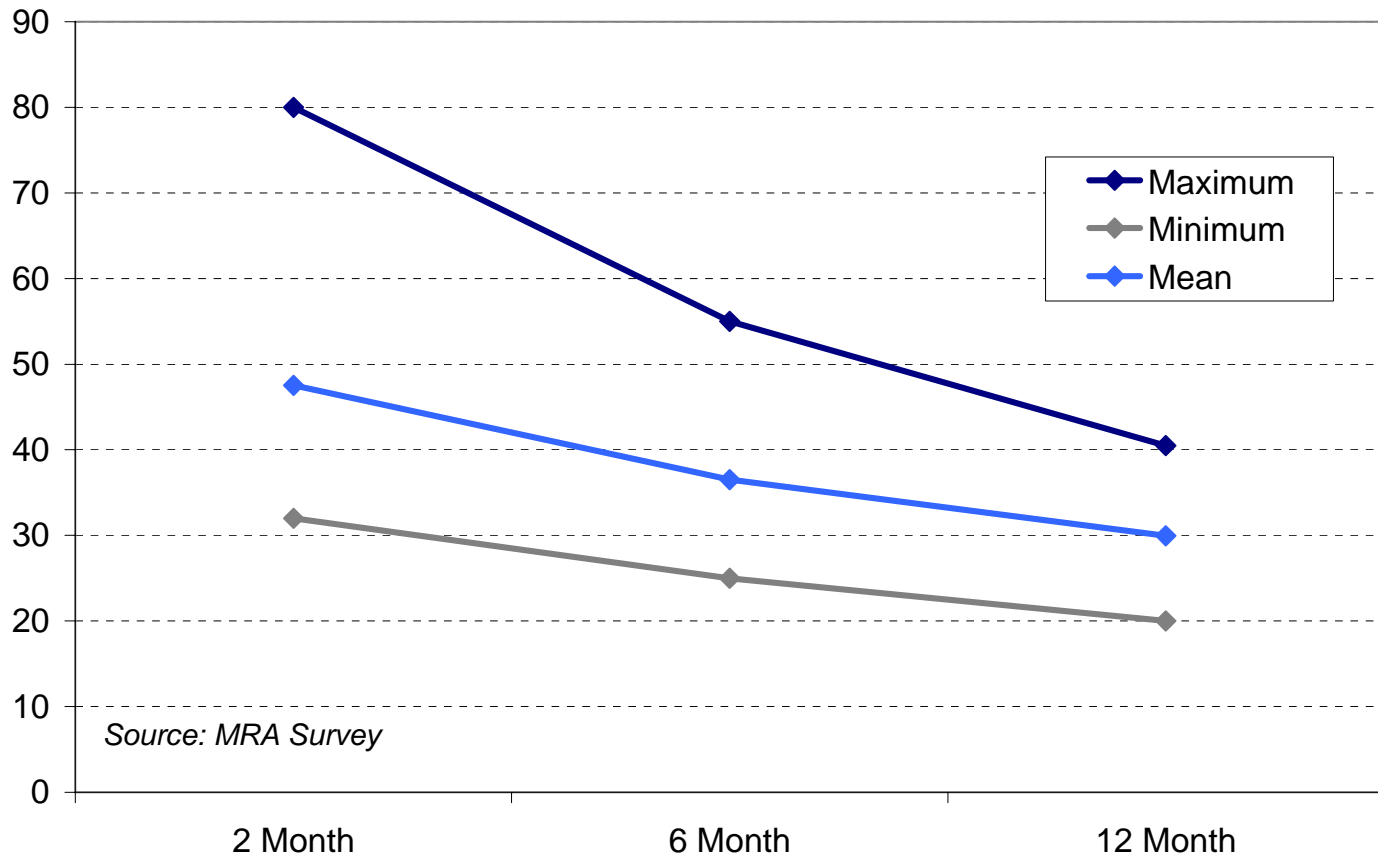
And a Wide Range for 2009...

2009 High Print in VIX



Termstructure of Forecasts

SPX Realized Volatility Forecasts



Source: MRA Survey

Conclusions

- Equity volatility likely reached its highest point in Oct / Nov when the VIX closed above 80
- The government has thrown the “kitchen sink” at the market with various liquidity backstops
- However, we expect volatility to persist at well above historically normal levels for some time
- 3 Factors continue to drive equity volatility
 - Government intervention (picking winners and losers)
 - Deleveraging (fear of and actual impact of)
 - Unfolding economic contraction and resulting difficult corporate profit environment
- Risk has become highly macro (credit, FX, equity, commodity, rates) and equity volatility products have been instrumental in helping control overall portfolio risk.